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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. |
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EXAMINER

01.7  
ART UNIT

PAPER NUMBER

2871  
DATE MAILED:

02/13/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

|                              |                 |              |  |
|------------------------------|-----------------|--------------|--|
| <b>Office Action Summary</b> | Application No. | Applicant(s) |  |
|                              | 09/196,185      | HUR ET AL.   |  |
|                              | Examiner        | Art Unit     |  |
|                              | Mike Qi         | 2871         |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on the election of 18 January 2001.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 1-3,6-13 and 18-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 4,5 and 14-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claims \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. § 119**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

**Attachment(s)**

- |   |  |
|---|--|
| 15) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                  | 18) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s) _____   |
| 16) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 19) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 17) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 20) <input type="checkbox"/> Other:  |

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## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 4, 16 and 17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 4 recites “a main layer made of either molybdenum or molybdenum alloy, a supplementary layer which is located either on or under the main layer ....” What is the main layer? For examination purpose, the main layer is the data wire or the gate wire.

Claim 16 recites “The liquid crystal display of 17, further comprising ... .”

Claim 17 recites “the liquid crystal display of claim 18, wherein ....”

Is that the claim 16 dependent on claim 15? For the examination purpose, the claim 16 reads as according to claim 15.

Is that the claim 17 dependent on claim 16? For the examination purpose, the claim 17 reads as according to claim 16.

### ***Claim Rejections - 35 U.S.C. § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over US ~~6~~,043,859 (Maeda).

Claim 4, Maeda discloses (col.4, lines 20-23) that the metal film (can be the data wire or the gate wire) made of molybdenum or molybdenum alloy.

Although Maeda does not expressly disclose using the supplementary layer, but Maeda discloses (col.6, lines 5-34) to assure contact reliability, the nitride film having superior corrosion resistance can be used, and increasing the film thickness also can block infiltration of external moisture. The supplementary layer is located either on or under the metal wire, that is to increase the thickness of the metal wire, so as to improve the corrosion resistance, so that decreasing the wire disconnection.

Therefore, using supplementary layer which can be the molybdenum nitride or molybdenum alloy nitride film, so as to improve the corrosion resistance as claimed in claim 4 would have been obvious.

5. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Meada as applied to claim 4 above, and further in view of US 6,011,277 (Yamazaki).

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Claim 5, Yamazaki discloses (col. <sup>14</sup>6, lines 7-30) that a two-layer electrode (gate wire or data wire), lower chromium layer and upper metallic layer, and the metallic layer can be a molybdenum layer, a wolfram (tungsten) layer, etc. Meada also discloses (col.6, lines 5-34) that tungsten, chromium, etc, are high melting point metal having superior corrosion resistance, so as to assure the contact reliability. Therefore, the supplementary layer comprises one selected from the group consisting of tungsten, chromium, zirconium and nickel as claimed in claim 5 would have been obvious.

6. Claims 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant admitted prior art, in view of US 9,043,859 (Maeda).

Claim 14, Applicant admitted prior art (col.1, lines 11-22) indicated that in general, an LCD has:

- a substrate (insulating substrate, e.g., glass);
- a gate wire formed on the substrate;
- a gate insulating layer covering the gate wire;
- a data wire formed on the gate insulating layer;
- a passivation layer formed on the data wire;
- an ITO pixel electrode formed on the passivation layer and connected to the data wire (the drain electrode) through the contact hole.

Applicant admitted prior art does not expressly disclose the data wire is made of either molybdenum or molybdenum alloy, and a supplementary data wire is located either on or under

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the data wire and made of either molybdenum nitride or molybdenum alloy nitride.

However, Maeda discloses (col.6, lines 5-34) to assure contact reliability, the nitride film having superior corrosion resistance can be used, and increasing the film thickness also can block infiltration of external moisture. The supplementary layer is located either on or under the metal wire, that is to increase the thickness of the metal wire, so as to improve the corrosion resistance, so that decreasing the wire disconnection. So that using the supplementary layer which can be the molybdenum nitride or molybdenum alloy nitride film would have been obvious.

Therefore, using supplementary layer to improve the corrosion resistance as claimed in claim 14 would have been obvious.

7. Claims 15-17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant admitted prior art and Maeda as applied to claim 14 above, and further in view of US 6,011,277 (Yamazaki).

Claim 15 and 17, Yamazaki discloses (col.<sup>14</sup>~~6~~, lines 7-30) that a two-layer electrode (gate wire or data wire), lower chromium layer and upper metallic layer, and the metallic layer can be a molybdenum layer, a wolfram (tungsten) layer, etc. Maeda also discloses (col.6, lines 5-34) that tungsten, chromium, etc, are high melting point metal having superior corrosion resistance, so as to assure the contact reliability. Therefore, the supplementary layer comprises one selected from the group consisting of tungsten, chromium, zirconium and nickel to achieve high corrosion resistance as claimed in claims 15 and 17 would have been obvious.

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Claim 16, see the detailed explanation of Meada above.

***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mike Qi whose telephone number is (703)308-6213 .

Mike Qi  
January 31, 2001



**William L. Sikes  
Supervisory Patent Examiner  
Technology Center 2800**